LIVERMORE LAB
REPORT

A weekly review of scientific and technological achievements from Lawrence Livermore National Laboratory, Oct. 28-Nov. 1 2013.

Newsweek FROM THE TAP TO THE ENERGY MARKET

NIF is trying to achieve fusion ignition in a laboratory setting.

A tiny pellet barely the diameter of a human hair could lead to endless clean energy from tap water.

Scientists including those at Lawrence Livermore's National Ignition Facility are moving closer to fusion ignition.

They are working to recreate the super-hot conditions at the centers of stars and our sun but in miniature. They fire 192 lasers at a chamber the size of a pencil eraser that contains a pellet about two millimeters wide. Inside, the pellet is coated with a mix of deuterium and tritium, which are two isotopes of hydrogen.

Deuterium can be readily found in water and tritium is refined from lithium, which is an element in garden soil.

To read more, go to *Newsweek*.

FEDTECH DATA A LA MODE

The advantages to using modular data centers are speed and cost, says Lawrence Livermore's Anna Maria Bailey. Photo courtesy of John Lee.

Many federal data centers are hulking warehouses crammed with servers on racks, backup power, cooling units and massive lines of electrical wiring and networking cable.

But some agencies, such as Lawrence Livermore and the Veterans Affairs Department, are taking a closer look at modular data centers -- "pods" or "cubes" built by a single manufacturer that come stocked with servers, racks, power and cooling -- to respond to a variety of computing challenges. Some of them are even on wheels.

Recognizing the benefits of going modular, numerous manufacturers have begun offering such products, including the Cisco Containerized Data Center, HP's Flexible Data Center and IBM's Portable Modular Data Center.

The advantages to going modular are speed and cost, says Anna Maria Bailey, program manager for Lawrence Livermore's high-performance computing (HPC) facility. It takes about half the time to prepare a site for a pod than for a traditional data center, she says.

To read more, go to *Fed Tech Magazine*.

The Weather Channel BABY IT'S COLD OUTSIDE

Unusually cool sea surface temperatures in the tropical Pacific Ocean could explain the 'global warming hiatus.'

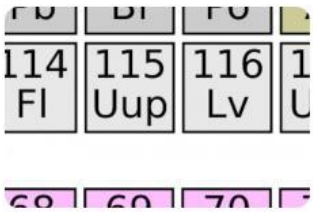
Scientists probing the mystery of the so-called "global warming hiatus" may have made a breakthrough.

According to a new study in the journal *Nature*, a persistent area of unusually cool sea surface temperatures in the tropical Pacific Ocean could explain why, despite ever-increasing amounts of manmade greenhouse gases in the atmosphere, global average surface temperatures have increased at a slower rate during the past 15 years.

Benjamin Santer, a climate scientist at Lawrence Livermore National Laboratory, expressed a similar view. "My take on the 'warming pause' is that a 15-year period with relatively muted warming does not provide a scientifically compelling reason for fundamentally re-evaluating our estimates of the sensitivity of the climate system to human-caused increases in greenhouse gases," he said.

The most recent IPCC report said that the slowdown is "due in roughly equal measure" to natural climate variability, such as La Niña events in the Pacific Ocean, and reduced incoming energy from the sun by volcanic eruptions that help scatter incoming solar energy back into space.

To read more, go to *The Weather Channel*.



Ununpentium (element 115) is the most recent element to be reconfirmed.

A new set of experiments backs up the discovery of element 115, which was first discovered by Lawrence Livermore National Laboratory and Russian researchers.

An international team of physicists has synthesized an element with 115 protons in the GSI accelerator in Germany. This isn't the first time a research group has synthesized the element, which has the temporary name of ununpentium (Latin for one-one-five).

The Livermore and Russian scientists first made ununpentium in the early 2000s and published a paper about it in 2006. But at the time, the International Union of Pure and Applied Chemistry didn't consider that enough evidence to officially recognize -- or name -- ununpentium.

The new GSI studies are another step toward official recognition.

To read more, go to *Popular Science*.

HUFF POST SCIENCE **THE SEARCH FOR THE ELUSIVE**

A view of the bottom of the large Underground Xenon detector that scientists are using in the search for dark matter.

Nearly a mile underground in an abandoned gold mine, one of the most important quests in physics has come up empty-handed in the search for the elusive substance known as dark matter. But scientists are not giving up.

The most advanced Earth-based search for the mysterious material that has mass but cannot be seen turned up "absolutely no signal" of dark matter, said Richard Gaitskell of Brown University, a scientist working on the Large Underground Xenon experiment in South Dakota. A detector attached to the International Space Station has so far also failed to find any dark matter.

Three researchers from Lawrence Livermore National Laboratory – principal investigator Adam Bernstein and staff scientists Peter Sorensen and Kareem Kazkaz, all from the Lab's Rare Event Detection Group in Physics Division – have been closely involved with the project since its inception

The team plans to keep looking for another year, but researchers are already planning to build a more sensitive experiment on the site, using a bigger tank of xenon.

To read more, go to *The Huffington Post*.
